

Remarks

The Office Action mailed March 17, 2006 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-22 are now pending in this application. Claims 1-22 stand rejected.

The rejection of Claims 1-3 and 8-11 under 35 U.S.C. § 102(e) as being anticipated by Kiernan et al. (U.S. Patent 6,728,594) ("Kiernan") is respectfully traversed.

Kiernan describes a weight control tuning system (100) and a method for fine tuning a cigarette manufacturing process. The method includes measuring the weight of a rod of manufactured cigarettes using a weight measurement sensor (106). The measurements are then loaded into a control optimization program (140) which uses the measurements to generate tuned control parameters that are input into a control system (142). The control system tunes the manufacturing process based on the tuned control parameters.

Applicants respectfully traverse the assertion on page 3 of the Office Action that Kiernan teaches a method comprising "receiving, in real-time, for each of the plurality of equipment combinations, a plurality of measured process parameters." Rather, Kiernan describes a system wherein "[e]ach piece of testing equipment typically measures one or more particular properties of the cigarettes supplied thereto." (Column 7, lines 50-52) Applicants submit that measuring quality properties of a product is not the equivalent of "measuring process parameters," as is required by Applicants' claimed invention. Moreover, measuring product quality is not the equivalent of measuring parameters of a plurality of equipment combinations. Kiernan does not describe or suggest measuring process parameters of a plurality of equipment.

Applicants also traverse the assertion on page 3 of the Office Action that Kiernan teaches a method comprising "determining at least one derived quantity from the plurality of measured process parameters." Rather, Kiernan describes "a plurality of individual optimization programs, each of which is designed to produce an optimized control parameter for use in fine tuning a particular manufacturing process control system." Applicants submit

that the process of determining an optimized control parameter is not the equivalent of quantifying a plurality of measured process parameters. Kiernan does not describe or suggest deriving any sort of quantity from a plurality of measured process parameters.

Furthermore, Applicants respectfully traverse the assertion on page 3 of the Office Action that Kiernan describes a method comprising “recommending a change to an equipment operation based on the measured process parameters and the derived quantities.” Rather, Kiernan describes “a PID controller...used along with the optimized control parameters to monitor changes in the cigarette property of interest, and to continue making changes accordingly.” (Column 8, lines 21-25) Specifically, Kiernan describes a PID that automatically makes changes based on control parameters. Kiernan does not describe “recommending a change” based on both “measured process parameters” and “derived quantities.”

Claim 1 recites a method for operating a facility having a plurality of equipment combinations, each equipment combination is operable interactively with at least one other equipment combination, wherein the method comprises “receiving, in real-time, for each of the plurality of equipment combinations, a plurality of measured process parameters . . . determining at least one derived quantity from the plurality of measured process parameters . . . recommending a change to an equipment operation based on the measured process parameters and the derived quantities.”

Kiernan does not describe or suggest a method for operating a facility having a plurality of equipment combinations as is recited in Claim 1. More specifically, Kiernan does not describe or suggest a method including receiving, in real-time, for each of a plurality of equipment combinations, a plurality of measured process parameters; determining at least one derived quantity from the plurality of measured process parameters; and recommending a change to an equipment operation based on the measured process parameters and the derived quantities. Rather, in contrast to the present invention, Kiernan describes automatically fine tuning a manufacturing process by measuring a property of a product to determine an optimized control parameter. Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Kiernan.

Claims 2-3 and 8 depend from independent Claim 1. When the recitations of Claims 2-3 and 8 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-3 and 8 likewise are patentable over Kiernan.

Claim 9 recites a method of analyzing the health of an equipment combination operating in a system that includes a plurality of other equipment combinations coupled to the equipment combination through conduits, and wherein the equipment combination includes a driver machine and a driven machine coupled in rotational synchronicity, wherein the method comprises “receiving a measured process parameter associated with the driver machine . . . receiving a measured process parameter associated with the driven machine . . . receiving at least one measured process parameter associated with the plurality of other equipment combinations . . . deriving a process parameter quantity for at least one of the measured process parameter associated with the driver machine and the measured process parameter associated with the driven machine using the at least one measured process parameter associated with the plurality of other equipment combinations.”

Kiernan does not describe or suggest a method of analyzing the health of an equipment combination as is recited in Claim 1. More specifically, Kiernan does not describe or suggest a method including receiving a measured process parameter associated with a driver machine; receiving a measured process parameter associated with a driven machine; receiving at least one measured process parameter associated with a plurality of other equipment combinations; and deriving a process parameter quantity for at least one of the measured process parameter associated with the driver machine and the measured process parameter associated with the driven machine using the at least one measured process parameter associated with the plurality of other equipment combinations. Rather, in contrast to the present invention, Kiernan describes automatically fine tuning a manufacturing process by measuring a property of a product to determine an optimized control parameter. Accordingly, for at least the reasons set forth above, Claim 9 is submitted to be patentable over Kiernan.

Claims 10-11 depend from independent Claim 9. When the recitations of Claims 10-11 are considered in combination with the recitations of Claim 9, Applicants submit that dependent Claims 10-11 likewise are patentable over Kiernan.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-3 and 8-11 be withdrawn.

The rejection of Claims 4, 5, 7, 12-15, 18, 19, and 20-22 under 35 U.S.C. § 103(a) as being unpatentable over Kiernan in view of Blevins et al. (U.S. Patent 6,445,962) (“Blevins”) is respectfully traversed.

Kiernan is described hereinabove. Blevins describes a method for controlling a process control network (10) using an auto-tuner. The method includes generating data using a PID function block (62) and collecting the data in a data collection unit (68). The data is analyzed by a process characteristic determining unit (69) to calculate process characteristics which are then transmitted to a tuning controller (71). Tuning controller (71) uses the process characteristics to auto-tune the process. Notably, Blevins describes capturing data from individual tuning elements to determine a tuning parameter for an individual device. Blevins does not describe or suggest receiving a plurality of process parameters for a plurality of equipment combinations. Furthermore, Blevins describes capturing dynamic data of the tuning elements to determine the tuning parameter for the device. Blevins does not describe or suggest determining a derived quantity from a plurality of measured process parameters. Moreover, Blevins describes auto-tuning a process based on the dynamic data. Blevins does not describe or suggest a system that uses measured process parameters and a derived quantity to produce a recommendation for changing an equipment combination.

Claims 4, 5, and 7 depend from independent Claim 1, which recites a method for operating a facility having a plurality of equipment combinations, each equipment combination is operable interactively with at least one other equipment combination, wherein the method comprises “receiving, in real-time, for each of the plurality of equipment combinations, a plurality of measured process parameters . . . determining at least one derived

quantity from the plurality of measured process parameters . . . recommending a change to an equipment operation based on the measured process parameters and the derived quantities.”

Neither Kiernan nor Blevins, considered alone or in combination, describe or suggest a method for operating a facility having a plurality of equipment combinations as is recited in Claim 1. More specifically, neither Kiernan nor Blevins, considered alone or in combination, describe or suggest a method including receiving, in real-time, for each of a plurality of equipment combinations, a plurality of measured process parameters; determining at least one derived quantity from the plurality of measured process parameters; and recommending a change to an equipment operation based on the measured process parameters and the derived quantities. Rather, in contrast to the present invention, Kiernan describes automatically fine tuning a manufacturing process by measuring a property of a product to determine an optimized control parameter, and Blevins merely describes auto-tuning a process. Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Kiernan in view of Blevins.

Claims 4, 5, and 7 depend from independent Claim 1. When the recitations of Claims 4, 5, and 7 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 4, 5, and 7 likewise are patentable over Kiernan in view of Blevins.

Claim 12 recites an integrated monitoring and control system for a plant wherein the plant has a plurality of equipment combinations that are operable interactively with each other and with individual equipment and wherein the combinations are operable to maintain selected plant operational conditions, wherein the monitoring and control system comprises “a plurality of sensors operatively coupled to the equipment combinations, the plurality of sensors measuring process parameters for monitoring plant operation and assessing equipment combination condition, and providing output signals to said monitoring and control system . . . a derived quantity layer communicatively coupled to a data bus, said derived quantity layer configured to . . . receive the measured process parameters . . . compute values for process parameters using the measured process parameters . . . a rule set layer comprising at least one rule associated with at least some of the plurality of equipment combinations for determining a health of the equipment combination . . . recommendation

layer for correlating the health of the equipment combination to at least one of a mitigating procedure, a maintaining procedure, and an operation procedure.”

Neither Kiernan nor Blevins, considered alone or in combination, describe or suggest an integrated monitoring and control system for a plant as is recited in Claim 12. More specifically, neither Kiernan nor Blevins, considered alone or in combination, describe or suggest an integrated monitoring and control system including a plurality of sensors for measuring process parameters; a derived quantity layer configured to receive the measured process parameters and compute values for the process parameters using the measured process parameters; a rule set layer comprising at least one rule associated with at least some of a plurality of equipment combinations for determining a health of the equipment combination; and a recommendation layer for correlating the health of the equipment combination to at least one of a mitigating procedure, a maintaining procedure, and an operation procedure. Rather, in contrast to the present invention, Kiernan describes automatically fine tuning a manufacturing process by measuring a property of a product to determine an optimized control parameter, and Blevins merely describes auto-tuning a process. Accordingly, for at least the reasons set forth above, Claim 12 is submitted to be patentable over Kiernan in view of Blevins.

Claims 13-15, 18, and 19 depend from independent Claim 12. When the recitations of Claims 13-15, 18, and 19 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 13-15, 18, and 19 likewise are patentable over Kiernan in view of Blevins.

Claim 20 recites a computer program embodied on a computer readable medium for monitoring a plant, the plant having a plurality of equipment combinations operating interactively with each other and with individual equipment, the program comprising “a code segment that controls a computer that receives a plurality of process parameters from sensors operatively coupled to the equipment combinations and individual equipment and then . . . derives values for process parameters using the measured process parameters . . . selects a rule from a set of rules comprising a plurality of commands that direct data analysis for each at least one of measured process parameter, a derived quantity, a plurality of measured

process parameters and a derived quantities associated with an equipment combination . . . recommends at least one of a mitigating procedure, a maintaining procedure, and an operation procedure.”

Neither Kiernan nor Blevins, considered alone or in combination, describes or suggests a computer program as is recited in Claim 20. More specifically, neither Kiernan nor Blevins, considered alone or in combination, describes or suggests a computer program that controls a computer that receives a plurality of process parameters from sensors operatively coupled to equipment combinations and individual equipment; derives values for process parameters using the measured process parameters; selects a rule from a set of rules comprising a plurality of commands that direct data analysis for each at least one of measured process parameter, a derived quantity, a plurality of measured process parameters and a derived quantities associated with an equipment combination; and recommends at least one of a mitigating procedure, a maintaining procedure, and an operation procedure. Rather, in contrast to the present invention, Kiernan describes automatically fine tuning a manufacturing process by measuring a property of a product to determine an optimized control parameter, and Blevins merely describes auto-tuning a process. Accordingly, for at least the reasons set forth above, Claim 20 is submitted to be patentable over Kiernan in view of Blevins.

Claims 21-22 depend from independent Claim 20. When the recitations of Claims 21-22 are considered in combination with the recitations of Claim 20, Applicants submit that dependent Claims 21-22 likewise are patentable over Kiernan in view of Blevins.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 4, 5, 7, 12-15, 18, 19, and 20-22 be withdrawn.

The rejection of Claims 16 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Kiernan in view of Blevins and in further view of Gudaz et al. (U.S. Patent 6,510,353) (“Gudaz”) is respectfully traversed.

Kiernan and Blevins are described hereinabove. Gudaz describes a procedure to simulate a response of a process control group. Specifically, Gudaz describes generating a

robustness map for different sets of tuning parameters for a region in which a process control loop is stable. Using the robustness map, a technician can select a set of parameters with which the control loop operates at a desired robustness. Applicants submit that Gudaz does not make up for the deficiencies of Kiernan and Blevins.

Claims 16 and 17 depend from independent Claim 12, which recites an integrated monitoring and control system for a plant wherein the plant has a plurality of equipment combinations that are operable interactively with each other and with individual equipment and wherein the combinations are operable to maintain selected plant operational conditions, wherein the monitoring and control system comprises “a plurality of sensors operatively coupled to the equipment combinations, the plurality of sensors measuring process parameters for monitoring plant operation and assessing equipment combination condition, and providing output signals to said monitoring and control system . . . a derived quantity layer communicatively coupled to a data bus, said derived quantity layer configured to . . . receive the measured process parameters . . . compute values for process parameters using the measured process parameters . . . a rule set layer comprising at least one rule associated with at least some of the plurality of equipment combinations for determining a health of the equipment combination . . . recommendation layer for correlating the health of the equipment combination to at least one of a mitigating procedure, a maintaining procedure, and an operation procedure.”

No combination of Kiernan, Blevins, or Gudaz describes or suggests an integrated monitoring and control system for a plant as is recited in Claim 12. More specifically, no combination of Kiernan, Blevins, or Gudaz describes or suggests an integrated monitoring and control system including a plurality of sensors for measuring process parameters; a derived quantity layer configured to receive the measured process parameters and compute values for the process parameters using the measured process parameters; a rule set layer comprising at least one rule associated with at least some of a plurality of equipment combinations for determining a health of the equipment combination; and a recommendation layer for correlating the health of the equipment combination to at least one of a mitigating procedure, a maintaining procedure, and an operation procedure. Rather, in contrast to the

present invention, Kiernan describes automatically fine tuning a manufacturing process by measuring a property of a product to determine an optimized control parameter, Blevins merely describes auto-tuning a process, and Gudaz describes running a process loop simulation to find a desired set of operating parameters for the process loop. Accordingly, for at least the reasons set forth above, Claim 12 is submitted to be patentable over Kiernan in view Blevins and further in view of Gudaz.

Claims 16 and 17 depend from independent Claim 12. When the recitations of Claims 16 and 17 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 16 and 17 likewise are patentable over Kiernan in view Blevins and further in view of Gudaz.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 16 and 17 be withdrawn.

The rejection of Claim 6 under 35 U.S.C. § 103 as being unpatentable over Kiernan

Kiernan is described hereinabove.

Claim 6 depends from independent Claim 1, which recites a method for operating a facility having a plurality of equipment combinations, each equipment combination is operable interactively with at least one other equipment combination, wherein the method comprises “receiving, in real-time, for each of the plurality of equipment combinations, a plurality of measured process parameters . . . determining at least one derived quantity from the plurality of measured process parameters . . . recommending a change to an equipment operation based on the measured process parameters and the derived quantities.”

Kiernan does not describe or suggest a method for operating a facility having a plurality of equipment combinations as is recited in Claim 1. More specifically, Kiernan does not describe or suggest a method including receiving, in real-time, for each of the plurality of equipment combinations, a plurality of measured process parameters; determining at least one derived quantity from the plurality of measured process parameters; and recommending a change to an equipment operation based on the measured process parameters and the derived

quantities. Rather, in contrast to the present invention, Kiernan describes automatically fine tuning a manufacturing process by measuring a property of a product to determine an optimized control parameter. Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Kiernan.

Claim 6 depends from independent Claim 1. When the recitations of Claim 6 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 6 likewise is patentable over Kiernan.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 6 be withdrawn.

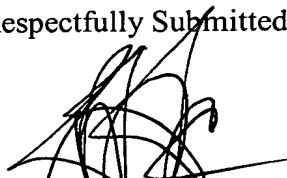
Moreover, Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Kiernan, Blevins, or Gudaz considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Kiernan with one or more of Blevins or Gudaz because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for these reasons, along with the reasons given above, Applicants request that the Section 103 rejections of the Claims be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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